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CUTTING FISH LOSSES WITH SOLAR DRIERS

by Abdel Kader Sanakoua

MALI, IDRC -- Drying fish by spreading it on the ground will be no more than a nostalgic memory for Malian fishermen if current research on the development of solar driers achieves conclusive results.

The Bamako solar energy laboratory in the West African country of Mali is currently experimenting with six prototype fish driers intended for use by the 80 000 fishermen of the Niger "Delta". This region, 2 500 kilometres from the sea, supplies from 100 000 to 120 000 tonnes of freshwater fish annually, or 75 percent of Malian production. The catch is the country's only abundantly available source of animal protein.

One third of the Delta's fish catch is dried in the sun, in the open air. The rest is either smoked, consumed fresh, or frozen. The traditional method of open-air drying for two to seven days has been widely used, making it possible to export fish to places as far as 600 kilometres from the fishing villages.

However, drying fish for such a long period and at temperatures that are sometimes too low encourages the proliferation of insect pests such as the Dermestes, which ruins from 25 to 40 percent of production.

The objective of the research is to develop and test driers capable of drying the fish more quickly and at temperatures that will prevent the proliferation of insects.

The solar driers will make use of materials customarily used in the region, including baked clay bricks. The fishermen should also be able to operate them

without special knowledge and move them when necessary.

With financial and technical support from the International Development Research Centre (IDRC), the research project aims not only to develop new drying methods but also to measure available solar energy. The director of Opération Pêche, a fishery development agency financed by the European Development Fund and directed by the Malian Rural Development Department, will be responsible for promoting the use of the solar driers among the population once the experimental phase has been completed.

Several prototypes are currently under study. In the mobile drier, for example, drying takes place in a polyethylene-covered wooden shed in which the fish are placed on screens. For two days, 40 kilograms of fish are subjected to temperatures above 50 degrees Celsius. At the moment, the researchers are having trouble with the polyethylene cover because it deteriorates under the effect of the sun's ultraviolet rays.

Other prototypes resemble wooden cases equipped with screens and adjustable shutters to control airflow. The fish are subjected to a current of hot dry air which circulates between the shelves by simple convection. This drier costs less than the polyethylene-covered shed (90 000 Malian francs instead of 130 000) and can dry 15 kilograms of fish in two days.

Other more sophisticated driers are also being tested. These include a model with a capacity of 50 kilograms, equipped with nine solar collectors for a total surface of 14 square metres. It dries the fish in 24 hours.

Opération Pêche is interested in this industrial model for drying fish products intended for export. As a major exporter of freshwater fish, Mali could derive significant economic benefit from this drier.

Work on fish driers, however, is still at the experimental stage; they have not yet been used commercially. In addition, some of the work has not produced the intended results. In some prototypes, there have been problems with the exhaust of moisture-laden air. The economic impact of the introduction of such

driers will also have to be evaluated. Will the increased costs resulting from their use be offset by the elimination of losses and the increased production?

Finally, the 80 000 fishermen in the area covered by Opération Pêche may not spontaneously accept the new equipment as it would disrupt their traditional drying methods. Nevertheless, since its annual production is significant, Mali has every reason to reduce the amount of fish spoiled during drying. More Malians, particularly those living in remote areas, would thus have access to this important source of protein.

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